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10/532,250

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EXAMINER

KIM, DAVID S

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/532,250	<b>Applicant(s)</b> NAKAGAWA ET AL.	
	<b>Examiner</b> DAVID S. KIM	<b>Art Unit</b> 2613	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## DETAILED ACTION

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

#### **Komine in view of Kobayashi**

3. **Claims 1-5, 7, and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komine et al. ("Integrated system of white LED visible-light communication and power-line communication", hereinafter "Komine") in view of Kobayashi (JP 2001036592 A, references are made to the version machine-translated into English).

**Regarding claim 1**, Komine discloses:

A broadcast system, comprising:

an LED light source for lighting (LEDs in Fig. 2);

a power line that supplies electric power to the LED light source (power-line in Fig. 2);

a data modulator that modulates data, superimposes the resulting data on an electric power waveform into modulated data, and transmits the modulated data via the power line (power-line modem in Fig. 2); and

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a filter that selectively separates data out of the modulated data on the power line and controls light intensity or blinking of the LED light source (BPF in Fig. 2);

wherein data is transmitted based on changes in light intensity or blinking of the LED light source (transmission from LEDs to Receiver in Fig. 2).

Komine does not expressly disclose:

a data modulator that modulates and ***multiplexes a plurality of pieces of data***, superimposes the resulting ***plurality of pieces of data*** on an electric power waveform into ***a plurality of modulated pieces of data***, and transmits the ***plurality of modulated pieces of data*** via the power line; and

a filter that selectively separates ***one or more pieces of data*** out of ***the plurality of modulated pieces of data*** on the power line and controls light intensity or blinking of the LED light source; wherein data is transmitted based on changes in light intensity or blinking of the LED light source.

However, the concept of multiplexing a plurality of pieces of data and filtering out a particular piece(s) of data is extremely well known in the art. Kobayashi provides a suitable example (see the multiplexed frequencies in Drawings 3 and 5 and frequency-selective circuit 8 for filtering out a particular carrier frequency in Drawing 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a well-known concept with the prior art of record. One of ordinary skill in the art would have been motivated to do this for any variety of reasons associated with multiplexed communications. Kobayashi's specific example provides the benefit of shortened processing time when the transmission characteristic in a power line is bad (paragraph [0039]).

**Regarding claim 2**, Komine in view of Kobayashi discloses:

The broadcast system according to Claim 1, wherein the filter has a selector for selecting data (Kobayashi, frequency-selective circuit 8 in Drawing 2).

**Regarding claim 3**, Komine in view of Kobayashi discloses:

The broadcast system according to Claim 2, wherein the selector selects data to be transmitted (Komine, transmission from LEDs to Receiver in Fig. 2) based on changes in light intensity or blinking of

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the LED light source in conformity with instruction data on the power line (Komine, data from the PC on the power-line).

**Regarding claim 4**, Komine in view of Kobayashi discloses:

The broadcast system according to Claim 1, wherein the filter controls light intensity or blinking of the LED light source while a plurality of pieces of data is multiplexed (Kobayashi, frequency-selective circuit 8 in Drawing 2 would control the LEDs in Fig. 2 of Komine through the selection of the carrier frequency that would pass through to the LEDs), and selects data by a receiver unit that receives light from the LED light source (Komine, Receiver in Fig. 2).

**Regarding claim 5**, Komine in view of Kobayashi discloses:

The broadcast system according to Claim 1, wherein the data modulator frequency division multiplexes a plurality of pieces of data (Kobayashi, frequency multiplexed signals in Drawings 3 and 5), and the filter selects one of a plurality of band pass filters with different frequency bandwidths (Kobayashi, carrier detector circuits 4-7 in Drawing 2) and separates data (Kobayashi, frequency-selective circuit 8 in Drawing 2).

**Regarding claim 7**, Komine in view of Kobayashi discloses:

An electric bulb, which receives supplied electric power and emits light for lighting, comprising:  
an LED light source for lighting (Komine, LEDs in Fig. 2); and  
a filter that selectively separates one or more of a plurality of pieces of modulated data (Kobayashi, frequency-selective circuit 8 in Drawing 2), which is superimposed on supplied electric power (Komine, the adder before the LEDs in Fig. 2), and controls light intensity or blinking of the LED light source (Kobayashi, frequency-selective circuit 8 in Drawing 2 would control the LEDs in Fig. 2 of Komine through the selection of the carrier frequency that would pass through to the LEDs).

**Regarding claim 8**, Komine in view of Kobayashi discloses:

The electric bulb according to Claim 7, wherein:  
the electric power is AC power (Komine, AC in Fig. 2);  
the electric bulb comprises an AC-DC converter that converts AC power to DC power (Komine, AC/DC in Fig. 2); and

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a data component separated by the filter is superimposed on the DC power (Komine, the adder before the LEDs in Fig. 2), which is provided by the AC-DC converter (Komine, output from AC/DC in Fig. 2), and the LED light source is driven by the resulting superimposed DC power (Komine, output from the adder in Fig. 2).

#### **Komine in view of Mensing**

4. **Claims 1-4 and 6-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komine in view of Mensing et al. (WO 01/63788 A2, hereinafter "Mensing").

**Regarding claim 1**, Komine discloses:

A broadcast system, comprising:

an LED light source for lighting (LEDs in Fig. 2);

a power line that supplies electric power to the LED light source (power-line in Fig. 2);

a data modulator that modulates data, superimposes the resulting data on an electric power waveform into modulated data, and transmits the modulated data via the power line (power-line modem in Fig. 2); and

a filter that selectively separates data out of the modulated data on the power line and controls light intensity or blinking of the LED light source (BPF in Fig. 2);

wherein data is transmitted based on changes in light intensity or blinking of the LED light source (transmission from LEDs to Receiver in Fig. 2).

Komine does not expressly disclose:

a data modulator that modulates and ***multiplexes a plurality of pieces of data***, superimposes the resulting ***plurality of pieces of data*** on an electric power waveform into ***a plurality of modulated pieces of data***, and transmits the ***plurality of modulated pieces of data*** via the power line; and

a filter that selectively separates ***one or more pieces of data*** out of ***the plurality of modulated pieces of data*** on the power line and controls light intensity or blinking of the LED light source; wherein data is transmitted based on changes in light intensity or blinking of the LED light source.

However, the concept of multiplexing a plurality of pieces of data and filtering out a particular piece(s) of data is extremely well known in the art. Mensing provides a suitable example (the time-division multiplexed cells on p. 7, l. 14-15 and the suggested by the address technique on p. 8, l. 2 for filtering out the appropriate cell). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement such a well-known concept with the prior art of record. One of ordinary skill in the art would have been motivated to do this for any variety of reasons associated with multiplexed communications. In contrast to the single receiving units in Komine (LED lighting box and Receiver box in Fig. 2), Mensing shows that multiplexed communications enable communication transmissions to multiple receiving units (Mensing, CPDs and appliances in Fig. 1), thus serving additional customers.

**Regarding claim 2**, Komine in view of Mensing discloses:

The broadcast system according to Claim 1, wherein the filter has a selector for selecting data (Mensing, the address technique on p. 8, l. 2 suggests some kind of selector for selecting the appropriate data cell).

**Regarding claim 3**, Komine in view of Mensing discloses:

The broadcast system according to Claim 2, wherein the selector selects data to be transmitted (Komine, transmission from LEDs to Receiver in Fig. 2) based on changes in light intensity or blinking of the LED light source in conformity with instruction data on the power line (Komine, data from the PC on the power-line).

**Regarding claim 4**, Komine in view of Mensing discloses:

The broadcast system according to Claim 1, wherein the filter controls light intensity or blinking of the LED light source while a plurality of pieces of data is multiplexed (Mensing, the address technique on p. 8, l. 2 suggests some kind of selector for selecting the appropriate data cell, which would the LEDs in Fig. 2 of Komine through the selection of the data cell that would pass through to the LEDs), and selects data by a receiver unit that receives light from the LED light source (Komine, Receiver in Fig. 2).

**Regarding claim 6**, Komine in view of Mensing discloses:

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The broadcast system according to Claim 1, wherein the data modulator time division multiplexes a plurality of pieces of data (Mensing, the time-division multiplexed cells on p. 7, l. 14-15), adds tag data to the resulting divided data (Mensing, ATM header in Fig. 4), and transmits the resulting data; and the filter identifies data based on the tag data, and selectively separates data (Mensing, the address technique on p. 8, l. 2 suggests some kind of selector for filtering out the appropriate data cell, and a header generally contains address data which would be identified to employ an address technique).

**Regarding claim 7**, Komine in view of Mensing discloses:

An electric bulb, which receives supplied electric power and emits light for lighting, comprising:

an LED light source for lighting (Komine, LEDs in Fig. 2); and

a filter that selectively separates one or more of a plurality of pieces of modulated data (Mensing, the time-division multiplexed cells on p. 7, l. 14-15), which is superimposed on supplied electric power (Komine, the adder before the LEDs in Fig. 2), and controls light intensity or blinking of the LED light source (Mensing, the time-division multiplexed cells on p. 7, l. 14-15 would control the LEDs in Fig. 2 of Komine through the selection of the data cell that would pass through to the LEDs).

**Regarding claim 8**, Komine in view of Mensing discloses:

The electric bulb according to Claim 7, wherein:

the electric power is AC power (Komine, AC in Fig. 2);

the electric bulb comprises an AC-DC converter that converts AC power to DC power (Komine, AC/DC in Fig. 2); and

a data component separated by the filter is superimposed on the DC power (Komine, the adder before the LEDs in Fig. 2), which is provided by the AC-DC converter (Komine, output from AC/DC in Fig. 2), and the LED light source is driven by the resulting superimposed DC power (Komine, output from the adder in Fig. 2).

### **Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zalitzky et al. (WO 02/15413 A2) is cited to show the use of multiplexing to maximize data transfer capacity in power line communication systems (p. 1-2, bridging paragraph).

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. K./  
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/  
Supervisory Patent Examiner, Art Unit 2613